

Search Plan and Results

Question

What impact has mandatory folic acid fortification had on the incidence of CVD and stroke in the US and Canada? (DGAC 2010)

Date Searched

6/25/2009

Inclusion Criteria

Subjects/Population: Human subjects.

Age: Children, men and women of all ages.

Setting: US and Canada only.

Health Status: Healthy and those with elevated chronic disease risk (CHD/CVD, Type 2 diabetes, metabolic syndrome and obesity).

Nutrition Related Problem/Condition: None.

Search Criteria

Study Design Preferences: RCT or clinical controlled studies, large non-randomized observational studies, cohort, case-control studies, systematic reviews and meta-analysis.

Size of study Groups: The sample size must equal 10 adults for each study group. For example, this would include 10 patients in the intervention group and 10 patients in the control or comparison group.

Study Drop Out Rate: Less than 20%; preference for smaller dropout rates.

Year Range: June 1999 to June 2009.

Authorship: If an author is included on more than one review article or primary research article that is similar in content, the most recent review or article will be accepted and earlier versions will be rejected.

Languages: Limited to articles in English.

Other: Article must be published in peer-reviewed journal.

Exclusion Criteria

Subjects/Population:

- Animal and in vitro studies
- Malnourished/third-world populations or disease incidence not relative to US population (e.g. malaria).

Age: Not applicable.

Setting: Hospitalized patients.

Health Status: Medical treatment/therapy and diseased subjects (already diagnosed with disease related to study purpose).

Nutrition Related Problem/Condition: All conditions.

Search Criteria

Study Design Preferences: Not applicable.

Size of Study Groups: Sample sizes <10.

Study Drop Out Rate: If the dropout rate in a study is 20% or greater, the study will be rejected.

Year Range: Prior to June 1999.

Authorship: Studies by same author similar in content.

Languages: Articles not in English.

Other: Abstracts or presentations and articles not peer reviewed (websites, magazine articles, Federal reports, etc.).

Search Terms: Search Vocabulary

Electronic Databases

("Coronary Disease"[Mesh] OR "Cerebrovascular Disorders"[Mesh>NoExp] OR "Stroke"[Mesh>NoExp] OR "Heart Diseases"[Mesh] OR "Cardiovascular Diseases"[Mesh>NoExp]) AND ("folic acid"[mh] OR folate) AND ("Food, Fortified"[Mesh] OR fortification)

Total hits from all electronic database searches: 48

Total articles identified to review from electronic databases: 13

Articles Identified Via Handsearch or Other Means

Summary of Articles Identified to Review

Number of Primary Articles Identified: 1

Number of Review Articles Identified: 0

Total Number of Articles Identified: 1

Number of Articles Reviewed but Excluded: 12

List of Articles Included for Evidence Analysis

Yang Q, Botto LD, Erickson JD, Berry RJ, Sambell C, Johansen H, Friedman JM. [Improvement in stroke mortality in Canada and the United States, 1990 to 2002.](#) *Circulation.* 2006 Mar 14; 113 (10): 1, 335-1, 343. PMID: 16534029.

List of Excluded Articles with Reason

Excluded Articles	Reason for Exclusion
Anderson JL, Horne BD, Carlquist JF, Bair TL, Habashi J, Hart NI, Jones SK, Muhlestein JB; Intermountain Heart Collaborative Study Group <u>Effect of implementation of folic acid fortification of food on homocysteine concentrations in subjects with coronary artery disease.</u> <i>Am J Cardiol.</i> 2002 Sep 1; 90 (5): 536-539. No abstract available. PMID: 12208419.	It does not answer the question. About homocysteine.
Anderson JL, Jensen KR, Carlquist JF, Bair TL, Horne BD, Muhlestein JB. <u>Effect of folic acid fortification of food on homocysteine-related mortality.</u> <i>Am J Med.</i> 2004 Feb 1; 116 (3): 158-164. PMID: 14749159.	It does not answer the question. About homocysteine.
Bostom AG, Jacques PF, Liaugaudas G, Rogers G, Rosenberg IH, Selhub J. <u>Total homocysteine lowering treatment among coronary artery disease patients in the era of folic acid-fortified cereal grain flour.</u> <i>Arterioscler Thromb Vasc Biol.</i> 2002 Mar 1; 22 (3): 488-491. PMID: 11884295.	It does not answer the question. About homocysteine.
Brilakis ES, McConnell JP, Ballman KV, Klee GG, Berger PB <u>Lack of association between plasma homocysteine and angiographic coronary artery disease in the era of fortification of cereal grain flour with folic acid.</u> <i>Atherosclerosis.</i> 2002 Dec; 165 (2): 375-381. PMID: 12417290.	It does not answer the question.

<p>Dalmeijer GW, Olthof MR, Verhoef P, Bots ML, van der Schouw YT. <i>Eur J Clin Nutr</i>. 2008 Mar; 62 (3): 386-394. Epub 2007 Mar 21. Prospective study on dietary intakes of folate, betaine and choline and cardiovascular disease risk in women. PMID: 17375117.</p>	<p>International study.</p>
<p>Dhonukshe-Rutten RA, de Vries JH, de Bree A, van der Put N, van Staveren WA, de Groot LC. Dietary intake and status of folate and vitamin B12 and their association with homocysteine and cardiovascular disease in European populations. <i>Eur J Clin Nutr</i>. 2009 Jan; 63 (1): 18-30. Epub 2007 Sep 12. PMID: 17851461.</p>	<p>International study.</p>
<p>Hoey L, McNulty H, Askin N, Dunne A, Ward M, Pentieva K, Strain J, Molloy AM, Flynn CA, Scott JM. Effect of a voluntary food fortification policy on folate, related B vitamin status and homocysteine in healthy adults. <i>Am J Clin Nutr</i>. 2007 Nov; 86 (5): 1,405-1,413. PMID: 17991653.</p>	<p>It does not answer the question. About dietary intake and biomarker status of folate.</p>
<p>Ionescu-Ittu R, Marelli AJ, Mackie AS, Pilote L. Prevalence of severe congenital heart disease after folic acid fortification of grain products: Time trend analysis in Quebec, Canada. <i>BMJ</i>. 2009 May 12; 338: b1, 673. doi: 10.1136/bmj.b1, 673., PMID: 19436079.</p>	<p>It does not answer the question. About congenital heart disease.</p>
<p>Lutsep HL, Campbell S, Chambliss LE, Howard VJ, Toole JF. Plasma total homocysteine levels in stroke patients screened for the vitamin intervention for stroke prevention clinical trial in the era of folate fortification. <i>Neuroepidemiology</i>. 2006; 26 (1): 45-51. Epub 2005 Oct 25. PMID: 16254453.</p>	<p>It does not answer the question. It evaluated homocysteine.</p>
<p>Malinow MR, Duell PB, Irvin-Jones A, Upson BM, Graf EE. Increased plasma homocyst(e)ine after withdrawal of ready-to-eat breakfast cereal from the diet: Prevention by breakfast cereal providing 200 microg folic acid. <i>J Am Coll Nutr</i>. 2000 Aug; 19 (4): 452-457. PMID: 10963464.</p>	<p>It does not answer the question. About homocysteine.</p>
<p>Neal B, MacMahon S, Ohkubo T, Tonkin A, Wilcken D; PACIFIC Study Group. Dose-dependent effects of folic acid on plasma homocysteine in a randomized trial conducted among 723 individuals with coronary heart disease. <i>Eur Heart J</i>. 2002 Oct; 23 (19): 1, 509-1, 515. PMID: 12395803.</p>	<p>It does not answer the question. About homocysteine.</p>
<p>Shirodaria C, Antoniades C, Lee J, Jackson CE, Robson MD, Francis JM, Moat SJ, Ratnatunga C, Pillai R, Refsum H, Neubauer S, Channon KM. Global improvement of vascular function and redox state with low-dose folic acid: Implications for folate therapy in patients with coronary artery disease. <i>Circulation</i>. 2007 May 1; 115 (17): 2, 262-2, 270. Epub 2007 Apr 9. PMID: 17420345.</p>	<p>It does not answer the question. About effects of folic acid on human vessels.</p>

